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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/594,171	06/15/2000	Eugene P. Marsh	M4065.132/P132	8887

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EXAMINER

ECKERT II, GEORGE C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/594,171

Applicant(s)

Marsh

Examiner
George C. Eckert II

Art Unit
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Apr 23, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 79-82 and 85-92 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 79-82 and 85-92 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec 21, 2001 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

1. Applicant's amendment dated April 23, 2003 in which claims 79-81 & 85-92 were amended and claim 84 canceled has been entered of record.

Claim Rejections - 35 U.S.C. § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 U.S.C. § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 79-82, 85-87, 89 and 92, are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,090,697 to Xing et al. Xing et al. teach, with reference to figure 3, a capacitor comprising:

a substrate having a trench (see the trench in fig. 3 formed in layer 316);

a barrier layer 310 disposed over a surface of the trench;

a first electrode 304 in contact with the barrier layer at a sidewall region;

a dielectric layer 312 in contact with the first electrode and the barrier layer; and

a second electrode 314 in contact with the dielectric layer at a sidewall region, wherein the first electrode comprises a platinum group metal film. Regarding the limitation that the platinum group metal film is uniform, Xing et al. teach in figure 3 that the electrode 304 is formed

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uniformly (having a constant thickness) over layer 310. Regarding the limitation that the platinum group metal is essentially free of carbon, Xing et al. make no mention as to the carbon content of their final device and therefore, because carbon is detrimental to the device, it is considered inherent that their electrode is essentially free of carbon. In the alternative, applicant teaches (instant specification, page 3, lines 4-5) that processing in oxygen is known in the art which reduces the carbon content of such layers. Finally, claim 79 includes a processing limitation which does not further limit the structure of the claim. Specifically, claim 79 cites that the platinum group metal film is an “oxygen annealed photo-decomposed” film. However, this limitation is drawn to the process by which the capacitor is made. That is, the limitation cites that the electrode is annealed in an oxygen environment and photo-decomposed. However, it is the final product which is evaluated for patentability. Instantly, the claimed final product is one comprising a platinum group electrode - that is, the electrode is formed of platinum, rhodium, iridium, etc. However, such platinum group electrode is taught by Xing et al., including platinum and the additional metals.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim,

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and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that applicant has the burden of proof to in such cases, as the above caselaw make clear.

Xing et al. further teach that the first electrode 304, which is the lower electrode (claim 82), may be formed from Pt (claims 80 & 81), Rh (claim 86), Pd (claim 87), Ir (claim 89) or Ru (claim 92), (see col. 4, lines 45-58). With regard to claim 85, these metals are inherently oxidation resistant.

3. Claims 88, 90 and 91, are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 6,090,697 to Xing et al. and further in view of US 5,566,045 to Summerfelt et al. Xing et al. taught or made obvious the device of claim 79 as discussed above but did not expressly teach that the electrode may be formed of Os, Au or Ag. Summerfelt et al. teach that such metals are commonly used to form capacitor electrodes (see col. 17, lines 3-7. See also element 34 - bottom electrode - in the table starting in column 10).

Xing et al. and Summerfelt et al. are combinable because they are from the same field of endeavor. At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the additional materials taught by Summerfelt et al. in the device of Xing et al. The motivation for doing so is that such metals are well known and obvious material choice substitutions which allow greater latitude in the device design (e.g. different materials may be

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chosen based on specific parameters or even mere availability). Therefore, it would have been obvious to combine Xing with Summerfelt et al. to obtain the invention of claims 88, 90 and 91.

Response to Arguments

4. Applicant's arguments filed April 23, 2003 have been fully considered but they are not persuasive. Applicant stresses that Xing et al. do not teach the newly claimed "uniform" electrode. However, Xing et al. do teach in figure 3 that lower electrode 304, formed of a platinum group metal, has a thickness which is constant over barrier layer 310. This layer is uniform and does not suffer a "pinch-off" effect. Applicant also asserts that the electrode layer of Xing et al. will not be "essentially carbon-free" as instantly claimed. However, as made clear in the above and previous rejections, that the layer is essentially carbon free is considered anticipated and/or obvious over Xing et al. Specifically, Xing et al. makes no mention of carbon content and thus the layer is considered free of carbon. However, even if Xing et al.'s silence must be interpreted as an admission of carbon, applicant has acknowledged the prior art methods of carbon reduction and the motivation for their use. As such, even if an essentially carbon free electrode is not anticipated by Xing et al., it is an obvious feature. Finally, applicant argues that Summerfelt does not cure the deficiencies of Xing et al. However, because Xing et al. is not a deficient reference, these arguments are not persuasive.

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Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to George C. Eckert II whose telephone number is (703) 305-2752.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Eddie Lee can be reached on (703) 308-1690. The fax number is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

GCE
June 17, 2003


GEORGE ECKERT
PRIMARY EXAMINER